

Application No. 10/720,650
Amendment dated April 3, 2006
Non-Final Office Action of January 26, 2006

Docket No.: BA1-03-1495 (03-1495)

AMENDMENTS TO THE DRAWINGS

The attached sheet of drawings includes changes to FIGURE 2A.

Attachment: Replacement sheet

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REMARKS

Claims 1-44 were pending when an Office Action was mailed on January 26, 2006. Claims 1-44 were rejected. The Office Action was not made Final.

Independent Claims 1, 15, and 26 have been amended to incorporate allowable subject matter from Applicants' co-pending patent application 10/720,772, the contents of which were incorporated by reference in this patent application. In addition, the specification of this patent application has been amended to incorporate text from Applicants' co-pending patent application 10/720,772 (which was incorporated by reference in this patent application and which has been allowed) that describes features that were shown in original FIGURE 2A of this patent application as filed. FIGURE 2A has also been amended to include reference numbers that refer to features originally shown in FIGURE 2A as filed and now described in the text that has been added. Thus, Applicants submit that no new matter has been introduced. Claims 31-44 have been cancelled.

In view of the remarks and arguments set forth herein, Applicants respectfully submit that Claims 1-30 that remain pending in this patent application are in condition for allowance. Applicants very respectfully request entry of this Amendment, reconsideration and allowance of all claims that remain pending in this patent application, and issuance of the patent application.

I. CLAIM REJECTIONS – 35 USC § 102

A. CLAIM REJECTIONS – 35 USC § 102(B)

Claims 1-2, 4, 9-10, and 31-33 were rejected under 35 USC § 102(b) as being anticipated by U.S. patent no. 4,765,749 to Bourgade et al. ("Bourgade"). The Office Action stated that Bourgade discloses in Figure 2 an IR calorimeter 20 comprising a body (absorbing element) 2, a temperature sensor (thermopile/plurality of thermopiles/plurality of thermocouples) 10 attached over a substantial portion of the body 2, the temperature sensor 10 is configured to sense a temperature change in a substantial portion of the body 2 responsive to absorption of captured radiation, a non-aqueous cooling system (heat sink) 12 configured to cool the body 2 from the

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temperature excessively elevated as a result of absorption of the captured radiation. The Office Action stated that wires 14 and 16 lead to a processing device which processes signals from the thermopile 10 and a resistance wire 8 (which was stated to be attached/part of the temperature sensor 10) respectively to, inherently, convert the thermopile signals in temperature and to apply energy to the resistance 8.

Applicants very respectfully traverse.

1. THE BOURGADE ET AL. REFERENCE

Bourgade discloses a quasi-adiabatic calorimeter for measuring the energy transported by radiation. Referring to Figure 1 of Bourgade, a calorimeter 20 is placed in a case 50 and is mounted on an insulating spacer 22 that is covered with a metal envelope 24. The upper part of the case 50 has a central opening 28 extending up to the calorimeter 20 to enable the incident radiation to interact therewith. Protective glass 30 seals the central opening 28 to protect the calorimeter from corrosive atmospheres during periods of non-use. A spacing ring 32, on which is placed a filter, is positioned between the protective glass 30 and the calorimeter 20. The lower face of the case 50 comprises a lead screen 34 serving to stop parasitic radiation when measuring the energy transported or transmitted by X radiation having a hard component. The case 50 can be covered with an insulating envelope 26 protecting it from temperature fluctuations of the ambient medium, which makes the calorimeter adiabatic. *See* Bourgade, column 3, lines 49-68.

Referring to Figure 2 of Bourgade, the calorimeter 20 comprises an absorbing element 2, which has an outer face 3 exposed to the incident radiation and an inner face 9. Absorbing element 2 is subject to a temperature rise during the interaction with the radiation. *See Id.*, column 4, lines 1-6. A thermopile 10 has a measuring face 11 in contact with the inner face 9 of a second coating 6 and a reference face 13. *See Id.*, column 6, lines 1-3.

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2. CLAIMS 1-2, 4, AND 9-10 ARE NOT ANTICIPATED BY BOURGADE

Applicants very respectfully submit that Claims 1-2, 4, and 9-10 are not anticipated by Bourgade. Claims 31-33 have been cancelled, thereby rendering moot their rejection.

As discussed above, Bourgade merely discloses that the calorimeter 20 is placed in a case 50 and is mounted on an insulating spacer 22 that is covered with a metal envelope 24. The upper part of the case 50 has a central opening 28 extending up to the calorimeter 20 to enable the incident radiation to interact therewith. Protective glass 30 seals the central opening 28 to protect the calorimeter from corrosive atmospheres during periods of non-use.

Applicants have amended Claim 1 more particularly point out and distinctly claim the body that is configured to admit and capture radiation and further configured to absorb energy from the captured radiation. The amendment to Claim 1 adds allowable subject matter from Applicants' co-pending patent application 10/720,772.

Thus, Applicants respectfully submit that Bourgade does not teach or suggest a body including "a first chamber having a first axis and being configured to receive a beam of radiation, the first chamber being further configured to absorb the beam of radiation" and "a second chamber having a second axis that is not collinear with the first axis, the second chamber being configured to receive at least a portion of the beam of radiation, the second chamber being further configured to further absorb at least the portion of the beam of radiation, such that substantially all of the radiation is absorbed", as recited in Claim 1, as amended.

Because Bourgade does not teach or suggest all of the claim limitations of Claim 1, as amended, Applicants very respectfully submit that Claim 1 is not anticipated by Bourgade and is in condition for allowance. Applicants respectfully request entry of the Amendment, and reconsideration and allowance of Claim 1.

Claims 2, 4, and 9-10 depend from Claim 1. Because of their dependency and for other reasons, Applicants respectfully submit that Claims 2, 4, and 9-10, are also not anticipated by

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Bourgade and are in condition for allowance. Applicants respectfully request reconsideration and allowance of Claims 2, 4, and 9-10.

II. CLAIM REJECTIONS -- 35 USC § 103

A. CLAIMS 1-2, 4, 6-8, 10, 15-17, 19, 24, 25, 31-33, AND 37-39

Claims 1-2, 4, 6-8, 10, 15-17, 19, 24, 25, 31-33, and 37-39 were rejected under 35 USC § 103(a) as being unpatentable over U.S. Patent No. 4,687,342 to Betzler et al. ("Betzler"). The Office Action stated that Betzler discloses in Figures 1, 2, and 13 a device in the field of Applicants' endeavor comprising an absorbing body 3, a resistor layer 4 (as a part of the Wheatstone bridge) attached over a substantial portion of the body 3 in thermal communication (through the metal carrier foil 1) with the body 3 and being configured to detect a change in temperature of the substantial portion of the body responsive to an IR absorbed/captured by the body. The Office Action also stated that the device comprises a detector (Wheatstone) configured to detect the resistance of the resistor 4 and a processing device (radiation measuring device/multimeter) 10 having a (first) component, inherently, configured to measure the radiation/temperature corresponding to the resistance of the resistor 4 (citing column 6, lines 52-68). The Office Action further stated that the device further comprises a dissipater (non-aqueous heat sink/cooling device) 11. The Office Action stated that, as shown in Figure 13, the power deriving from the temperature change and resulting measurable resistance change of the resistance change of the resistor would imply that the processing device comprises another (second) component to derive the power corresponding to the admitted/absorbed radiation.

Applicants very respectfully traverse.

1. THE BETZLER ET AL. REFERENCE

Betzler discloses a thermal radiation measuring system -- a bolometer -- with a radiation measuring device and a shielded reference device. Referring to Figure 1 of Betzler, a carrier foil is made of an electrically insulating material. Onto the carrier foil 1 a thermally conductive layer 2 is

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vacuum metallized. In the center of this thermally conductive layer 2 an absorber layer 3 made of the same material as the thermally conductive layer 2 is vacuum metallized. The absorber layer 3 establishes a measuring surface. The thermally conductive layer 2 and absorber layer 3 may also be of one piece construction. Opposite the absorber layer 3 on the other side of the carrier foil 1 there is a high-value resistor layer 4. *See Id.*, column 6, lines 30-51.

Referring to Figure 7 of Betzler, the radiation measuring device exposed to the radiation and the reference device shielded against the radiation are arranged one behind the other in a single housing. A cylindrical housing 71 is provided at one end with an inner collar 72. An arrangement 73 is supported on the inner collar 72. A base 77 is made of an insulating material. Contact pins 78 protrude through the base 77 end face on the side facing the radiation measuring device 76 as contact surfaces which can be connected to the contact surfaces on the radiation measuring device 76. The bottom of the carrier foil is also in contact with a dissipater 79, *i.e.*, a cylindrical body made of aluminum. An uninterrupted dividing disk 80 is mounted next to the base 77 to completely shield or isolate the measuring portion of the system against the reference portion. *See Id.*, column 7, line 55 – column 8, line 27.

2. CLAIMS 1-2, 4, 6-8, 10, 15-17, 19, 24, AND 25 ARE PATENTABLE OVER BETZLER BECAUSE BETZLER DOES NOT TEACH OR SUGGEST THE CLAIMED INVENTION AND THEREFORE A *PRIMA FACIE* CASE OF OBVIOUSNESS HAS NOT BEEN ESTABLISHED

Applicants respectfully submit that a *prima facie* case of obviousness has not been established because Betzler does not teach or suggest the claimed invention. Claims 31-33 and 37-39 have been cancelled, thereby rendering moot their rejection.

As discussed above, Betzler teaches that the radiation measuring device exposed to the radiation and the reference device shielded against the radiation are arranged one behind the other in a single housing.

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Therefore, Applicants respectfully submit that Betzler does not teach or suggest a body including “a first chamber having a first axis and being configured to receive a beam of radiation, the first chamber being further configured to absorb the beam of radiation” and “a second chamber having a second axis that is not collinear with the first axis, the second chamber being configured to receive at least a portion of the beam of radiation, the second chamber being further configured to further absorb at least the portion of the beam of radiation, such that substantially all of the radiation is absorbed”, as recited in Claims 1 and 15, as amended.

Because Betzler does not teach or suggest the claimed invention, Applicants respectfully submit that a *prima facie* case of obviousness has not been established, and that Claims 1 and 15, as amended, are patentable over Betzler and are in condition for allowance. Applicants respectfully request reconsideration and allowance of Claims 1 and 15.

Claims 2, 4, 6-8, and 10 depend from Claim 1; and Claims 16, 17, 19, 24, and 25 depend from Claim 15. By virtue of their dependency and for other reasons, Applicants respectfully submit that Claims 2, 4, 6-8, 10, 16, 17, 19, 24, and 25 are patentable over Betzler and are in condition for allowance. Applicants respectfully request reconsideration and allowance of Claims 2, 4, 6-8, 10, 16, 17, 19, 24, and 25.

B. CLAIMS 3 AND 14

Claims 3 and 14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bourgade. Applicants very respectfully traverse.

1. THE BOURGADE REFERENCE

The Bourgade reference has been discussed above.

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2. A PRIMA FACIE CASE OF OBVIOUSNESS HAS NOT BEEN ESTABLISHED
BECAUSE BOURGADE DOES NOT TEACH OR SUGGEST THE CLAIMED INVENTION

Applicants respectfully submit that a *prima facie* case of obviousness has not been established because Bourgade does not teach or suggest the claimed invention.

For the reasons discussed above, Applicants respectfully submit that Bourgade does not teach or suggest a body including “a first chamber having a first axis and being configured to receive a beam of radiation, the first chamber being further configured to absorb the beam of radiation” and “a second chamber having a second axis that is not collinear with the first axis, the second chamber being configured to receive at least a portion of the beam of radiation, the second chamber being further configured to further absorb at least the portion of the beam of radiation, such that substantially all of the radiation is absorbed”, as recited in Claim 1, as amended, from which Claims 3 and 14 depend. Thus, Applicants respectfully submit that a *prima facie* case of obviousness has not been established, that Claims 3 and 14 are not obvious and are patentable over Bourgade, and that Claims 3 and 14 are in condition for allowance. Applicants respectfully request reconsideration and allowance of Claims 3 and 14.

C. CLAIMS 14, 37, 38, AND 42-44

Claims 14, 37, 38, and 42-44 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bourgade in view of U.S. Patent No. 3,665,762 to Domen. Applicants very respectfully traverse.

Applicants respectfully submit that a *prima facie* case of obviousness has not been established because the combination of references does not teach or suggest the claimed invention.

1. THE BOURGADE REFERENCE

The Bourgade reference has been discussed above.

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2. THE DOMEN REFERENCE

Domen discloses a heat loss compensated calorimeter wherein a core is surrounded by a jacket and the jacket is surrounded by a constant temperature, adiabatic or floating shield. The core and jacket have the same heat capacities, and thermistors having the same temperature coefficients are embedded in the core and jacket to compare the heat present, by means of a Wheatstone Bridge. Domen, at Abstract.

Referring now to Figure 5, a tubular graphite shield 16 surrounds the tubular jacket, also preferably formed of graphite and consisting of a jacket base and a jacket cap, which in turn surrounds the cylindrical graphite core 12. Thermistors may be mounted within the bodies of the core and jacket base in any manner. The jacket base is supported at one end of the shield and the core is supported on the jacket base. *See Id.*, column 3, lines 30-45.

3. A Prima Facie Case of Obviousness Has Not Been Established Because the Combination of References Does Not Teach or Suggest the Claimed Invention

Applicants respectfully submit that a *prima facie* case of obviousness has not been established because the combination of references does not teach or suggest the claimed invention. Claims 37, 38, and 42-44 have been cancelled, thereby rendering moot their rejection.

Applicants respectfully submit that the combination of the Bourgade and Domen references fails to teach or suggest a body including “a first chamber having a first axis and being configured to receive a beam of radiation, the first chamber being further configured to absorb the beam of radiation” and “a second chamber having a second axis that is not collinear with the first axis, the second chamber being configured to receive at least a portion of the beam of radiation, the second chamber being further configured to further absorb at least the portion of the beam of radiation, such that substantially all of the radiation is absorbed”, as recited in Claim 1, as amended, from which Claim 14 depends.

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Thus, Applicants respectfully submit that a *prima facie* case of obviousness has not been established, that Claim 14 is not obvious and is patentable over the combination of the Bourgade and Domen references, and that Claim 14 is in condition for allowance. Applicants respectfully request reconsideration and allowance of Claim 14.

D. CLAIM 5

Claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Bourgade in view of Domen and further in view of U.S. Patent No. 6,572,263 to Refalo et al. ("Refalo"). Applicants very respectfully traverse.

Applicants respectfully submit that a *prima facie* case of obviousness has not been established because the combination of references does not teach or suggest the claimed invention.

I. THE BOURGADE AND DOMEN REFERENCES

The Bourgade and Domen references have been discussed above.

2. THE REFALO REFERENCE

Refalo discloses a heat-flow calorimeter 10 made up of a heat-conducting rod 16 with a test chamber 12 affixed to one end and a heat sink affixed to the other. The heat sink is maintained at a constant temperature and the heat liberated or absorbed by the test sample is measured by determining the amount of energy that must be introduced into the system to maintain a constant temperature differential across the length of the heat-conducting rod 16. Refalo, column 2, lines 14-21.

A zero heat transfer envelope 14 is used to insulate the unit and prevent heat from leaking into or out of the calorimeter. The envelope is made of three heat shield systems 23, 24, and 26. The first shield 23 is thin, highly conductive, and affixed to the measurement chamber 12. The sample is enclosed in the measurement chamber 12, thus allowing the first shield 23 to effectively

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match the sample temperature. The second shield 24 is relatively massive compared to the first shield 23 and its temperature is matched to that of the first shield 23. The third shield 26 surrounds the second shield 24 and its temperature is controlled to a constant value, thus protecting the zero heat transfer envelope 14 from ambient temperature variations. *Id.*, column 2, lines 22-33.

3. A *Prima Facie* Case of Obviousness Has Not Been Established Because the Combination of References Does Not Teach or Suggest the Claimed Invention

Applicants respectfully submit that a *prima facie* case of obviousness has not been established because the combination of references does not teach or suggest the claimed invention.

Applicants respectfully submit that the combination of the Bourgade, Domen, and Refalo references fails to teach or suggest does not teach or suggest a body including “a first chamber having a first axis and being configured to receive a beam of radiation, the first chamber being further configured to absorb the beam of radiation” and “a second chamber having a second axis that is not collinear with the first axis, the second chamber being configured to receive at least a portion of the beam of radiation, the second chamber being further configured to further absorb at least the portion of the beam of radiation, such that substantially all of the radiation is absorbed” as recited in Claim 1, from which Claim 5 depends. Thus, Applicants respectfully submit that a *prima facie* case of obviousness has not been established, that Claim 5 is not obvious and is patentable over the combination of Bourgade, Domen, and Refalo, and that Claim 5 is in condition for allowance. Applicants respectfully request reconsideration and allowance of Claim 5.

E. CLAIMS 5-8, 15-18, 23-25, 38, AND 39

Claims 5-8, 15-18, 23-25, 38, and 39 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bourgade in view of Domen and further in view of U.S. Patent Application Publication No. US 2003/0099276 to Argenti. Applicants very respectfully traverse.

Applicants respectfully submit that a *prima facie* case of obviousness has not been established because the combination of references does not teach or suggest the claimed invention.

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1. THE BOURGADE AND DOMEN REFERENCES

The Bourgade and Domen references have been discussed above.

2. THE ARGENTI REFERENCE

Referring to Figure 1, Argenti discloses an instrument 1 for measuring power emitted by a source of coherent or incoherent radiation, particularly of the laser type, that comprises an absorbent mass 2 having a known heat capacity, which is connected to a supporting body 3, which has a handle portion 4 and a display 5. Argenti, paragraph 22. The instrument 1 comprises means for sensing the variation over time of the temperature and that are provided by a first temperature sensor 10 and a second temperature sensor 11, which are constituted by a first thermocouple 10 or by a thermopile that is placed in close thermal contact with the center of gravity of the absorbent mass 2 and by a second thermocouple 11 or by a thermopile that is arranged inside the supporting body, for example inside the handle 4. *Id.*, paragraph 23.

It is also possible to arrange the first and second sensors on the thermal mass in two spaced points, for example one sensor in a central region of the absorbent mass and the other sensor in a radially spaced point. *Id.*, paragraph 24. The two thermocouples 10 and 11 are thermally insulated from each other. *Id.*, paragraph 26.

3. A *Prima Facie* Case of Obviousness Has Not Been Established Because the Combination of References Does Not Teach or Suggest the Claimed Invention

Applicants respectfully submit that a *prima facie* case of obviousness has not been established because the combination of references does not teach or suggest the claimed invention. Claims 38 and 39 have been cancelled, thereby rendering moot their rejection.

Applicants respectfully submit that the combination of the Bourgade, Domen, and Argenti references fails to teach or suggest does not teach or suggest a body including "a first chamber having a first axis and being configured to receive a beam of radiation, the first chamber

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being further configured to absorb the beam of radiation” and “a second chamber having a second axis that is not collinear with the first axis, the second chamber being configured to receive at least a portion of the beam of radiation, the second chamber being further configured to further absorb at least the portion of the beam of radiation, such that substantially all of the radiation is absorbed” as recited in Claim 1, as amended, from which Claim 5 depends, and as recited in Claim 15, as amended, from which Claims 16-18 and 23-25 depend.

Thus, Applicants respectfully submit that a *prima facie* case of obviousness has not been established, that Claims 5-8, 15-18, and 23-25 are not obvious and are patentable over the combination of Bourgade, Domen, and Refalo, and that Claims 5-8, 15-18, and 23-25 are in condition for allowance. Applicants respectfully request reconsideration and allowance of Claims 5-8, 15-18, and 23-25.

F. CLAIMS 11, 12, 26-29, 34, AND 35

Claims 11, 12, 26-29, 34, and 35 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bourgade in view of U.S. Patent No. 5,876,118 to Vogel. Applicants very respectfully traverse.

Applicants respectfully submit that a *prima facie* case of obviousness has not been established because the combination of references does not teach or suggest the claimed invention.

1. THE BOURGADE REFERENCE

The Bourgade reference has been discussed above.

2. THE VOGEL REFERENCE

Vogel discloses a calorimeter apparatus including a facility for rapid cooling of a heating vessel therein. A jacket surrounds the vessel wall. A partition member between the jacket and the vessel wall defines an inlet plenum adjacent the jacket and a spatial gap adjacent the vessel wall.

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Pressurized cooling gas is conveyed into the inlet plenum after termination of heating the vessel. The partition member has a distributed plurality of orifices such that the gas is jetted through the orifices to impingement cool the vessel wall. The gas is discharged from the spatial gap through an outlet plenum at an end wall of the vessel. The plurality of orifices are distributed in a pattern of varying density across the partition member such that uniform cooling of the vessel wall by the jetted gas is effected. Vogel, at Abstract.

3. A *Prima Facie* Case of Obviousness Has Not Been Established Because the Combination of References Does Not Teach or Suggest the Claimed Invention

Applicants respectfully submit that a *prima facie* case of obviousness has not been established because the combination of references does not teach or suggest the claimed invention. Claims 34 and 35 have been cancelled, thereby rendering moot their rejection.

Applicants respectfully submit that the combination of the Bourgade and Vogel references fails to teach or suggest “a first chamber having a first axis and being configured to receive a beam of radiation, the first chamber being further configured to absorb the beam of radiation” and “a second chamber having a second axis that is not collinear with the first axis, the second chamber being configured to receive at least a portion of the beam of radiation, the second chamber being further configured to further absorb at least the portion of the beam of radiation, such that substantially all of the radiation is absorbed” as recited in Claim 1, as amended, from which Claims 11 and 12 depend, and as recited in Claim 26, as amended, from which Claims 27-29 depend.

Thus, Applicants respectfully submit that a *prima facie* case of obviousness has not been established, that Claims 11, 12, and 26-29 are not obvious and are patentable over the combination of the Bourgade and Vogel references, and that Claims 11, 12, and 26-29 are in condition for allowance. Applicants respectfully request reconsideration and allowance of Claims 11, 12, and 26-29.

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G. CLAIMS 19-21

Claims 19-21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bourgade in view of Domen and Argenti and further in view of Vogel. Applicant respectfully traverses.

1. THE CITED REFERENCES

All of the cited references have been discussed above.

2. A Prima Facie Case of Obviousness Has Not Been Established Because the Combination of References Does Not Teach or Suggest the Claimed Invention

Applicants respectfully submit that a *prima facie* case of obviousness has not been established because the combination of references does not teach or suggest the claimed invention.

Applicants respectfully submit that the combination of the Bourgade, Domen, Argenti, and Vogel references fails to teach or suggest “a first chamber having a first axis and being configured to receive a beam of radiation, the first chamber being further configured to absorb the beam of radiation” and “a second chamber having a second axis that is not collinear with the first axis, the second chamber being configured to receive at least a portion of the beam of radiation, the second chamber being further configured to further absorb at least the portion of the beam of radiation, such that substantially all of the radiation is absorbed” as recited in Claim 15, as amended, from which Claims 19-21 depend. Thus, Applicants respectfully submit that a *prima facie* case of obviousness has not been established, that Claims 19-21 are not obvious and are patentable over the combination of Bourgade, Domen, Argenti, and Vogel, and that Claims 19-21 are in condition for allowance. Applicants respectfully request reconsideration and allowance of Claims 19-21.

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H. CLAIMS 13 AND 36

Claims 13 and 36 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bourgade in view of U.S. Patent No. 3,508,056 to Fricke. Applicants very respectfully traverse.

1. THE BOURGADE REFERENCE

The Bourgade reference is discussed above.

2. THE FRICKE REFERENCE

Fricke discloses a radiation power indicator for measuring the power in high power laser beams includes an energy absorbing detector. A heat sink rapidly conducts thermal energy away from the detector. The incident beam power is measured as a function of the thermal gradient across a thermal conductor between the detector and the heat sink. Fricke, at Abstract.

3. A *Prima Facie* Case of Obviousness Has Not Been Established Because the Combination of References Does Not Teach or Suggest the Claimed Invention

Applicants respectfully submit that a *prima facie* case of obviousness has not been established because the combination of references does not teach or suggest the claimed invention. Claim 36 has been cancelled, thereby rendering moot its rejection.

Applicants respectfully submit that the combination of the Bourgade and Fricke references fails to teach or suggest “a first chamber having a first axis and being configured to receive a beam of radiation, the first chamber being further configured to absorb the beam of radiation” and “a second chamber having a second axis that is not collinear with the first axis, the second chamber being configured to receive at least a portion of the beam of radiation, the second chamber being further configured to further absorb at least the portion of the beam of radiation, such that substantially all of the radiation is absorbed” as recited in Claim 1, from which Claim 13 depends.

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Thus, Applicants respectfully submit that a *prima facie* case of obviousness has not been established, that Claim 13 is not obvious and is patentable over the combination of the Bourgade and Fricke references, and that Claim 13 is in condition for allowance. Applicants respectfully request reconsideration and allowance of Claim 13.

I. CLAIM 30

Claim 30 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Bourgade in view of Vogel and further in view of Fricke. Applicants very respectfully traverse.

1. THE CITED REFERENCES

The cited references have been discussed above.

2. A *Prima Facie* Case of Obviousness Has Not Been Established Because the Combination of References Does Not Teach or Suggest the Claimed Invention

Applicants respectfully submit that a *prima facie* case of obviousness has not been established because the combination of references does not teach or suggest the claimed invention.

Applicants respectfully submit that the combination of the Bourgade, Vogel, and Fricke references fails to teach or suggest “a first chamber having a first axis and being configured to receive a beam of radiation, the first chamber being further configured to absorb the beam of radiation” and “a second chamber having a second axis that is not collinear with the first axis, the second chamber being configured to receive at least a portion of the beam of radiation, the second chamber being further configured to further absorb at least the portion of the beam of radiation, such that substantially all of the radiation is absorbed” as recited in Claim 26, as amended, from which Claim 30 depends. Thus, Applicants respectfully submit that a *prima facie* case of obviousness has not been established, that Claim 30 is not obvious and is patentable over the combination of the Bourgade, Vogel, and Fricke references, and that Claim 30 is in condition for allowance. Applicants respectfully request reconsideration and allowance of Claim 30.

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J. CLAIM 22

Claim 22 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Bourgade in view of Domen and Argenti and further in view of Fricke. Applicant respectfully traverses.

1. THE CITED REFERENCES

All of the cited references have been discussed above.

2. A *Prima Facie* Case of Obviousness Has Not Been Established Because the Combination of References Does Not Teach or Suggest the Claimed Invention

Applicants respectfully submit that a *prima facie* case of obviousness has not been established because the combination of references does not teach or suggest the claimed invention.

Applicants respectfully submit that the combination of the Bourgade, Domen, Argenti, and Fricke references fails to teach or suggest “a first chamber having a first axis and being configured to receive a beam of radiation, the first chamber being further configured to absorb the beam of radiation” and “a second chamber having a second axis that is not collinear with the first axis, the second chamber being configured to receive at least a portion of the beam of radiation, the second chamber being further configured to further absorb at least the portion of the beam of radiation, such that substantially all of the radiation is absorbed” as recited in Claim 15, as amended, from which Claim 22 depends. Thus, Applicants respectfully submit that a *prima facie* case of obviousness has not been established, that Claim 22 is not obvious and is patentable over the combination of Bourgade, Domen, Argenti, and Fricke, and that Claim 22 is in condition for allowance. Applicants respectfully request reconsideration and allowance of Claim 22.

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K. CLAIMS 40 AND 41

Claims 40 and 41 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bourgade in view of U.S. Patent No. 6,513,994 to DiGiovanni et al. (DiGiovanni). Claims 40 and 41 have been cancelled, thereby rendering moot their rejection.

L. CLAIMS 5 AND 23

Claims 5 and 23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Betzler in view of Refalo. Applicants very respectfully traverse.

1. THE CITED REFERENCES

The cited references have been discussed above.

2. A Prima Facie Case of Obviousness Has Not Been Established Because the Combination of References Does Not Teach or Suggest the Claimed Invention

Applicants respectfully submit that a *prima facie* case of obviousness has not been established because the combination of references does not teach or suggest the claimed invention.

Applicants respectfully submit that the combination of Betzler and Refalo does not teach or suggest “a first chamber having a first axis and being configured to receive a beam of radiation, the first chamber being further configured to absorb the beam of radiation” and “a second chamber having a second axis that is not collinear with the first axis, the second chamber being configured to receive at least a portion of the beam of radiation, the second chamber being further configured to further absorb at least the portion of the beam of radiation, such that substantially all of the radiation is absorbed” as recited in Claim 1, as amended, from which Claim 5 depends, and as recited in Claim 15, as amended, from which Claim 23 depends.

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Thus, Applicants respectfully submit that a *prima facie* case of obviousness has not been established, and that Claims 5 and 23 are patentable over the combination of Betzler and Refalo and are in condition for allowance. Applicants respectfully request reconsideration and allowance of Claims 5 and 23.

M. CLAIMS 11, 12, 20, 21, 34, AND 35

Claims 11, 12, 20, 21, 34, and 35 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Betzler in view of Vogel. Applicants very respectfully traverse.

1. THE CITED REFERENCES

The cited references have been discussed above.

2. A *Prima Facie* Case of Obviousness Has Not Been Established Because the Combination of References Does Not Teach or Suggest the Claimed Invention

Applicants respectfully submit that a *prima facie* case of obviousness has not been established because the combination of references does not teach or suggest the claimed invention. Claims 34 and 35 have been cancelled, thereby rendering moot their rejection.

Applicants respectfully submit that the combination of Betzler and Vogel does not teach or suggest “a first chamber having a first axis and being configured to receive a beam of radiation, the first chamber being further configured to absorb the beam of radiation” and “a second chamber having a second axis that is not collinear with the first axis, the second chamber being configured to receive at least a portion of the beam of radiation, the second chamber being further configured to further absorb at least the portion of the beam of radiation, such that substantially all of the radiation is absorbed” as recited in Claim 1, as amended, from which Claims 11 and 12 depend, and as recited in Claim 15, as amended, from which Claims 20 and 21 depend.

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Therefore, Applicants respectfully submit that a *prima facie* case of obviousness has not been established, and that Claims 11, 12, 20, and 21 are patentable over the combination of Betzler and Vogel and are in condition for allowance. Applicants respectfully request reconsideration and allowance of Claims 11, 12, 20, and 21.

N. CLAIMS 13, 22, AND 36

Claims 13, 22, and 36 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Betzler in view of Fricke. Applicants very respectfully traverse.

1. THE CITED REFERENCES

The cited references have been discussed above.

2. A *Prima Facie* Case of Obviousness Has Not Been Established Because the Combination of References Does Not Teach or Suggest the Claimed Invention

Applicants respectfully submit that a *prima facie* case of obviousness has not been established because the combination of references does not teach or suggest the claimed invention. Claim 36 has been cancelled, thereby rendering moot its rejection.

Applicants respectfully submit that the combination of Betzler and Fricke does not teach or suggest “a first chamber having a first axis and being configured to receive a beam of radiation, the first chamber being further configured to absorb the beam of radiation” and “a second chamber having a second axis that is not collinear with the first axis, the second chamber being configured to receive at least a portion of the beam of radiation, the second chamber being further configured to further absorb at least the portion of the beam of radiation, such that substantially all of the radiation is absorbed” as recited in Claim 1, as amended, from which Claim 13 depends, and as recited in Claim 15 from which Claim 22 depends.

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Therefore, Applicants respectfully submit that a *prima facie* case of obviousness has not been established, and that Claims 13 and 22 are patentable over the combination of Betzler and Fricke and are in condition for allowance. Applicants respectfully request reconsideration and allowance of Claims 13 and 22.

O. CLAIM 30

Claim 30 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Betzler in view of Vogel and further in view of Fricke. Applicants very respectfully traverse.

1. THE CITED REFERENCES

The cited references have been discussed above.

2. A *Prima Facie* Case of Obviousness Has Not Been Established Because the Combination of References Does Not Teach or Suggest the Claimed Invention

Applicants respectfully submit that a *prima facie* case of obviousness has not been established because the combination of references does not teach or suggest the claimed invention.

Applicants respectfully submit that the combination of Betzler, Vogel, and Fricke does not teach or suggest “a first chamber having a first axis and being configured to receive a beam of radiation, the first chamber being further configured to absorb the beam of radiation” and “a second chamber having a second axis that is not collinear with the first axis, the second chamber being configured to receive at least a portion of the beam of radiation, the second chamber being further configured to further absorb at least the portion of the beam of radiation, such that substantially all of the radiation is absorbed” as recited in Claim 26, as amended, from which Claim 30 depends.

Therefore, Applicants respectfully submit that a *prima facie* case of obviousness has not been established, and that Claim 30 is patentable over the combination of Betzler, Vogel, and Fricke

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and is in condition for allowance. Applicants respectfully request reconsideration and allowance of Claim 30.

CONCLUSION

In view of the above amendments and arguments, Applicants very respectfully submit that no new matter has been introduced by way of incorporation of allowable subject matter from Applicants' co-pending patent application serial no. 10/720,772, and that all claims that remain pending in this application are in condition for allowance. Applicants very respectfully request entry of the Amendment, reconsideration and allowance of claims 1-30 that remain pending in this application, and issuance of the patent application.

Dated: April 3, 2006

Respectfully submitted,

By 

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